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JOINT APPLIED PROJECT

Naval Surface Warfare Center Dahlgren Division:
Application of Lean Six Sigma in the Pre-Award Procurement Process

---

By: **Kristy M. Himes**
Constance M. Salisbury

September 2008

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REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.			
1. AGENCY USE ONLY *(Leave blank)*	**2. REPORT DATE** September 2008	**3. REPORT TYPE AND DATES COVERED** Joint Applied Project	
4. TITLE AND SUBTITLE Naval Surface Warfare Center Dahlgren Division: Application of Lean Six Sigma in the Pre-Award Procurement Process		**5. FUNDING NUMBERS**	
6. AUTHOR(S) Kristy Himes and Constance Salisbury			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000		**8. PERFORMING ORGANIZATION REPORT NUMBER**	
9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A		**10. SPONSORING/MONITORING AGENCY REPORT NUMBER**	
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.			
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited		**12b. DISTRIBUTION CODE**	

13. ABSTRACT (maximum 200 words)

This Project outlines Lean Six Sigma principles, provides examples of Lean Six Sigma events, and analyzes principles that can be applied to Navy acquisition and contracting.

The objective of this project is to: (1) provide an overview of Lean Six Sigma principles in contracting and acquisition; (2) identify Navy contracting processes that have and can be analyzed using Lean Six Sigma principles; (3) explore how Lean Six Sigma can be applied to interpret and implement regulations and instructions affecting the pre-award procurement process. The expected outcome of this project is an analysis of the applicability of using Lean Six Sigma processes to streamline the pre-award procurement process using Lean Six Sigma principles.

14. SUBJECT TERMS Lean, Six Sigma, Pre-Award Procurement Process, Procurement Action Lead Time (PALT), Acquisition, Contracting			**15. NUMBER OF PAGES** 77
			16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	**18. SECURITY CLASSIFICATION OF THIS PAGE** Unclassified	**19. SECURITY CLASSIFICATION OF ABSTRACT** Unclassified	**20. LIMITATION OF ABSTRACT** UU

NSN 7540-01-280-5500 Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. 239-18

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NAVAL SURFACE WARFARE CENTER DAHLGREN DIVISION: APPLICATION OF LEAN SIX SIGMA IN THE PRE-AWARD PROCUREMENT PROCESS

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Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN CONTRACT MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
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ABSTRACT

This Project outlines Lean Six Sigma principles, provides examples of Lean Six Sigma events, and analyzes principles that can be applied to Navy acquisition and contracting.

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TABLE OF CONTENTS

I. INTRODUCTION....1
A. BACKGROUND....1
B. OBJECTIVES OF RESEARCH....2
C. RESEARCH QUESTIONS....3
1. PRIMARY RESEARCH QUESTION....3
2. FIRST SUBSIDIARY QUESTION....4
3. SECOND SUBSIDIARY QUESTION....4
4. THIRD SUBSIDIARY QUESTION....4
5. FOURTH SUBSIDIARY QUESTION....4
D. BENEFITS OF STUDY....4
E. SCOPE AND LIMITATIONS
1. SCOPE....5
2. LIMITATIONS....5
F. METHODOLOGY....5
G. ORGANIZATION OF THE PROJECT....6

II. LEAN SIX SIGMA FOUNDATION....7
A. INTRODUCTION....7
B. BACKGROUND - LEAN SIX SIGMA....8
1. MYTHS OF LEAN SIX SIGMA....8
2. LEAN....8
3. SIX SIGMA....8
4. LEAN SIX SIGMA....10
5. LEAN SIX SIGMA ROLES AND RESPONSIBILITIES....11
A. EXECUTIVE LEADERSHIP COS....12
B. LEAN CHAMPION/LEAN OFFICE....12
C. VALUE STREAM CHAMPION....13
D. MASTER BLACK BELT/BLACK/GREEN BELT/TEAM LEADERS/MEMBERS....13
6. LEAN SIX SIGMA ROLES AND RESPONSIBILITIES....13
A. VALUE ADDED....14
B. NON-VALUE ADDED....14
C. NON-VALUE ADDED ESSENTIAL....14
D. PROCESS CUSTOMER....15
E. VALUE STREAM....15
F. STRATEGIC PLAN....15
G. IMPLEMENTATION OF LEAN-SIX SIGMA....20

III. NSWCDD CONTRACTS DIVISION (XDS) - ORGANIZATION/ACTIVITIES....23
A. BACKGROUND....23
B. CONTRACTING PROCESS....23
C. XDS DIVISION....24

D. CUSTOMER 25
E. APPLICATION OF LSS 27
F. LAUNCHING LSS 29
G. ADVANTAGES/DISA DVANTAGES - LSS 30
H. CURRENT STATE OF PRE-AWARD PROCUREMENT PROCESS 32

IV. ANALYSIS OF THE FUTURE STATE OF THE PRE-AWARD PROCUREMENT PROCESS AT NSWCDD 35
A. INTRODUCTION 35
B. PRE-AWARD PROCUREMENT 35
C. PLAN OF ACTION FOR IMPLEMENTING LSS APPROACH 36
D. VALUE STREAM ANALYSIS 38
E. CONCLUSION 46

V. CONCLUSIONS AND RECOMMENDATIONS 49
A. INTRODUCTION 49
B. PRIMARY RESEARCH QUESTION 50
1. CONCLUSION 50
2. RECOMMENDATION 51
3. RECOMMENDATION 51
C. FIRST SUBSIDIARY QUESTION 51
1. CONCLUSION 51
2. RECOMMENDATION 52
3. RECOMMENDATION 52
4. RECOMMENDATION 53
5. RECOMMENDATION 53
D. SECOND SUBSIDIARY QUESTION 53
1. CONCLUSION 53
E. THIRD SUBSIDIARY QUESTION 54
1. CONCLUSION 54
F. FOURTH SUBSIDIARY QUESTION 54
1. CONCLUSION 54
2. RECOMMENDATION 54
3. RECOMMENDATION 55
4. RECOMMENDATION 55
G. FINAL CONCLUSIONS AND RECOMMENDATIONS 55
1. FINAL CONCLUSIONS 55
H. SUGGESTED AREAS FOR FURTHER RESEARCH 56

LIST OF REFERENCES 57

INITIAL DISTRIBUTION LIST 59

LIST OF FIGURES

Figure 1. Six Sigma DMAIC Model (From NAVSEA Implementation Plan). 9
Figure 2. Lean Deployment Roles of NAVSEA (From NAVSEA Lean Implementation Plan. 11
Figure 3. NAVSEA LOB/PEO Business Model (From NAVSEA Lean Implementation Plan 12
Figure 4. Value Added/Non-Value Added Illustration (NSWCDD Lean Event).....14
Figure 5. NSWCDD Strategic Plan (From NSWCDD's Strategic Plan).....16
Figure 6. Current State Value Stream Map at NSWCDD (NSWCDD Lean Event).....17
Figure 7. Ideal State Value Stream Map at NSWCDD (NSWCDD Lean Event).....18
Figure 8. Contracts Requirements Process 24
Figure 9. Pre-Award Procurement Business Model 33

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LIST OF TABLES

Table 1. 10 Steps in aValue Stream Analsysis (VSA) 19
Table 2. Seaport-e Pre-Solicitation Process (From Seaport-e Task Order Checklist)...39
Table 3. Seaport-e Bid/Proposal Evaluation Process (From Seaport-e Task Order Checklist)....43
Table 4. Seaport-e Discussions/Negotiations/Award Process (From Seaport-e Task Order Checklist)....44

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LIST OF ACRONYMS AND ABBREVIATIONS

ARTC	AEGIS Training and Readiness Center
BSC	Balanced Score Card
CDSA	Com bat Direction Systems Activity
COR	Contracting Officer's Representative
CPI	Continuous Process Improvement
DAU	Defense Acquisition University
DFAR	Defense Federal Acquisition Regulations
DFAS	Defense Finance and Accounting Service
DoD	Departm ent of Defense
EDA	Electronic Document Access
FAR	Federal Acquisition Regulations
FedBizOpps	Federal Business Opportunities
FPDS-NG	Federal Procurement Data System – Next Generation
GWOT	Global War on Terrorism
JFCOM	Joint Forces Command
LSS	Lean Six Sigma
NAVSEA	Naval Sea Systems Command
NSWCDD	Naval Surface Warfare Center Dahlgren Division
NSWCIHD	Naval Surface Warfare Center Indian Head Division
PADS	Product Area Directorates
PALT	Procurement Action Lead Time
PEO	Program Executive Office
RIE	Rapid Improvement Event
RIP	Rapid Improvement Plan
SPS	Standard Procurement System
TQM	Total Quality Management
VSA	Value Stream Analysis
WAWF	Wide Area Workflow

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ACKNOWLEDGMENTS

I would like to thank my family for their support and understanding during this chaotic time in our lives. The many nights Kortney had to stay at daycare until closing time and the late night dinners are finally over with. To my Kortney Bird, you have been my motivation – thank you for pushing me to do my best! To my husband, thank you for lending me your ear every time I needed to complain. Thank you to my wonderful parents for believing in me and for the many weekends they kept Kortney while I worked on this project. I love my whole family and you are beautiful! Finally, thank you to Connie for the words of encouragement and the countless trips to Sheetz. (Kristy)

First, I would like to thank my family and friends for not taking it personally for the last two years when I randomly stare off into space. Caroline, thanks for setting the bar that I had to live up to, for being impressed that I undertook this challenge, and for considering new challenges of your own. Andrew, thanks for always knowing how to de-stress me and for understanding why we have had fewer home cooked meals these last two years. Now I can spend your senior year spoiling you (now go do your homework)! Joey, thanks for the encouraging words and all the extra animal duty you have had to handle! Thanks to Janine for the wonderful advice and girls' nights out, to Aunt Muriel, Uncle Tippy, and Linda for nagging me relentlessly to finish this, and to Aunt BJ for providing me a port in the storm on St. Simons Island. Finally, thanks to Kristy, my partner and my friend. p.s. can we go to the beach now? (Connie)

We would like to collectively thank Captain Joseph McGettigan for his generosity in placing such an importance on education here at Dahlgren, Captain Sheila Patterson for continuing to defend Dahlgren's education plan, Pete Kolakowski, Department Head, for his support and especially to Patricia Canciglia, XDS Division Head, for her unwavering support in bringing this program to Dahlgren and supporting each and every one of us in a very real way in our endeavors.

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I. INTRODUCTION

A. BACKGROUND

Lean is about speed, reducing lead time by eliminating waste. Waste is anything – time, costs, or work that adds no value in the eyes of the customer. (The Lean Enterprise Memory Jogger). Six Sigma is about quality and reducing defects by eliminating mistakes and reducing variation. (The Black Belt Memory Jogger). Lean Six Sigma (LSS) places emphasis on both of these areas. The economic customer only wants to pay for work that adds value (changes the form, fit or function) to the end product or service. Anything else, in the customer's eyes, is waste or non-value added. LSS helps identify customers, describe holistic processes, identify waste, and eliminate waste where possible (Lean Six-Sigma College Green Belt text).

Department of Defense (DoD) Contracting Offices and more specifically, Naval Surface Warfare Center Dahlgren Division (NSWCDD), is experiencing an increasing workload, an aging and soon retiring workforce, and an inability to hire a sufficient number of qualified Contract Specialists. LSS may be a valuable and efficient tool that can be utilized to address this current situation.

In April 2007, the Deputy Secretary of Defense instructed the Office of the Deputy Undersecretary of Defense for Business Transformation to create the Continuous Process Improvement (CPI)/LSS Program Office to expand the use of LSS throughout the department. A new directive issued in May 2008, which replaces the April 2007 directive, is an indication of the growing importance of LSS in DoD's business practices. The Deputy Secretary of Defense discusses the importance of LSS in the May 2008 DoD Directive. The following excerpt provides the purpose of this directive:

> Establishes policy and assigns responsibilities to institutionalize CPI/LSS as one of the primary approaches to assessing and improving the efficiency and effectiveness of DoD processes in support of the Department's national defense mission.
>
> (Deputy Secretary of Defense, 2008, DoD-Wide CPI/LSS Program)

The directive further instructs DoD components to:

1) Ensure implementation of CPI/LSS policies;

2) Implement CPI/LSS programs to improve overall effectiveness and efficiency across missions and functions to gain the broadest possible range of organizational improvements;
3) Develop and implement appropriate education and training procedures and promote CPI/LSS career development opportunities, to include a CPI/LSS award and performance objective initiative as appropriate; and
4) Establish CPI/LSS education, training, and certification procedures consistent with DoD-wide guidelines and standards and include CPI/LSS in individual employee performance objectives as appropriate.

(Deputy Secretary of Defense, 2008, DoD-Wide CPI/LSS Program)

The importance of LSS as a process improvement tool has been established through the issuance of this directive. We are investigating the use of LSS for procurement in this thesis. A large and critical part of the procurement arena is the pre-award procurement process. Based on the authors' experience, the pre-award process is an area likely to be identified by the customer as cumbersome and not customer need focused. It is also an area in which minimal investment up front could produce maximum results in the end state.

For the purposes of this project, the focus will be on large competitive noncommercial services contracts (any procurement greater than $100,000). The Naval Sea Systems Command (NAVSEA) has directed that all competitive services requirements be issued through Seaport-e portal. Therefore, this project will focus on the pre-award procurement process utilizing the Seaport-e portal. (The NAVSEA Seaport-e portal provides a standardized means of issuing competitive solicitations amongst a large group of approved contractors, as well as the ability to award and manage performance-based task orders.)

B. OBJECTIVES OF RESEARCH

The purpose of this project is to investigate whether LSS principles can be effectively applied to Navy acquisition and contracting. The authors' believe that the

volume of work at NSWC DD Contracts Division has consistently exceeded the capacity of the acquisition workforce, which has resulted in an increased Procurement Action Lead Time (PALT), dissatisfied customers, and low moral. This project will establish LSS as an advantageous means to benefit the pre-award procurement process and NSWCDD customers.

The objectives of this project are to:

- Provide an overview LSS principles and methodologies
- Introduce the application of LSS to the pre-award procurement process
- Describe the organizational structure of the NSWCDD Contracts Division
- Identify the current pre-award procurement process
- Establish the members of the Value Stream Analysis (VSA) team and their roles and responsibilities to address the waste or Non-Value added steps involved with the current pre-award procurement process
- Make recommendations that can result in reduced PALT, increased customer satisfactions and employee morale
- Offer recommendations for future acquisition and contracting related LSS projects

C. RESEARCH QUESTIONS

Through the researchers' knowledge, experience, and research conducted in regards to the pre-award procurement process and LSS methodologies, the following questions were developed as a basis for this research:

1. Primary Research Question

How can LSS be applied to the pre-award procurement process to streamline and improve acquisition processes, including effects on customer satisfaction, cost, and lead-time?

2. First Subsidiary Question

What are the various approaches for launching LSS programs in various acquisition, contracting, and procurement processes, e.g., mandated employee education and training, on the job training, consultant driven, cross-functional teams?

3. Second Subsidiary Question

What are the known and potential advantages and disadvantages of applying LSS methodologies to the pre-award procurement process?

4. Third Subsidiary Question

What is the current business model for the pre-award contracting process?

5. Fourth Subsidiary Question

How might LSS principles be applied to improve the current business practices in the pre-award procurement process? If LSS principles can be applied effectively in the pre-award procurement process, what is a reasonable plan of action for implementing these changes?

D. BENEFITS OF STUDY

This project analyzes the applicability of using LSS to improve contracting and procurement processes. Specifically, non-value added and non-essential activities may be identified as candidates for LSS intervention, including impacts on product and service quality, customer and employee satisfaction, and implementation issues. This project will serve as overall guidance on how to effectively implement LSS within the pre-award process, including the identification of key members of the VSA team and recognition of the numerous decision steps currently addressed in the pre-award process.

E. SCOPE AND LIMITATIONS

1. Scope

This project is confined to the pre-award procurement process utilizing the Seaport-e portal at NSWCDD Contracts Division.

2. Limitations

The members of this project did not conduct a LSS event associated with the pre-award procurement process at NSWCDD. Due to time constraints, the information and recommendations provided in this project are limited to personal experiences with LSS and the pre-award procurement process, as well as literature reviews conducted in both of these subject areas. No original data were collected or analyzed. Hence the research reported here is theoretical in nature, and additional research is needed to support our claims and recommendations.

F. METHODOLOGY

This project depended upon active participant research, and literature reviews to analyze the LSS principles and the pre-award procurement process.

One team member provided the LSS expertise with her background as a LSS Green Belt. In the past, she has participated in several LSS events and has taught training classes on LSS to other contracting personnel. The other team member was able to participate in a LSS event conducted by one of NSWCDD's program offices. This LSS event provided the experience needed to understand the mindset behind LSS methodologies.

Secondary research included reviews of DoD, NAVSEA, and NSWCDD's guides and instructions, published books, scholarly journals, trade magazines, and academic research papers focused on LSS and the pre-award procurement process. The research provided historical and intended future state perspectives, as well as an overview of LSS principles.

G. ORGANIZATION OF THE PROJECT

This project is divided into five chap ters. Chapter I provides a short background on the im portance of LSS, identif ies rese arch questions, describes potential benefits of the study, and addresses project scope an d lim itations. Chapter II addresses the foundation of LSS by presenti ng DoD and NAVSEA gui dance, detailing the processes associated with LSS, explains how these p rocesses can be im plemented, and introduces the roles and responsibilities of the m embers involved in the LSS process. Chapter III outlines the organiza tion and activities of NSW CDD Contrac ts Di vision includ ing the customer base, describes the im portance of a VSA team and the sign ificant role of the VSA Cha mpion, as well as provides an introdu ction into the current business m odel for the pre-award procurement process. Chapter IV analyzes the future s tate of the pre-award pro curement process utilizing the Sea port-e por tal a t NSW CDD and spec ifically identifies the members of the VSA team including the tasks they will need to carry out, such as m apping out the curren t pre-awar d procurem ent process while considering possible process variations. Chapter V pr ovides the conclusions and recomm endations related to the research questions, and suggested areas for further research.

II. LEAN SIX SIGMA FOUNDATION

A. INTRODUCTION

In a memorandum dated 3 May 2006, the Secretary of the Navy, Donald C. Winter, stated the following:

> As the Secretary of the Navy, I am challenged to lead the Department in executing two great tasks simultaneously: fighting today's war and positioning our Force for an uncertain future. We face additional fiscal pressures that lead us to better stewardship of taxpayer dollars where greater efficiency leads to improved effectiveness. While in industry, I found that both buyers and suppliers who employed Lean Six Sigma experienced better efficiencies, increased morale and higher levels of performance.
>
> (Secretary of the Navy, 2006, Memorandum)

The DoD is "transforming to a more agile, surgeable force to meet current readiness and support the ongoing Global War on Terrorism (GWOT)." (NAVSEA Implementation Plan). At the same time, DoD "faces a crisis in being able to apply sufficient budget and resources to re-capitalize the force with new equipment to meet future readiness." (NAVSEA Implementation Plan). On every front, DoD "must transform the way it does business to dramatically cut costs, improve throughput, shorten new product development cycles, enhance personnel development, and preserve fundamental values in order to win the GWOT both now and into the future." (NAVSEA Implementation Plan).

Admiral Paul E. Sullivan, the previous NAVSEA Commander, began to actively push LSS to the Warfare Centers (Admiral Sullivan e mail, 28 July 2006). Goals were established before the Warfare Centers were aware of LSS. The NSWC DD established a Tiger Team to determine the best and most proactive approach to this new mandate. LSS black belts and green belts were trained, goals were set, projects were run, the workforce was educated and a Lean Office was formed.

This chapter provides the basic foundation essential to understanding LSS. The concepts, tools, and myths associated with LSS will be addressed, as well as the roles and responsibilities of members involved in the LSS process. This introduction seeks to prepare the reader for the analysis contained in this project, which will be covered in subsequent chapters.

B. BACKGROUND - LEAN SIX SIGMA

1. Myths of Lean Six Sigma

To fully understand what LSS means, we must first understand a few of the myths associated with LSS. While LSS was originally used in manufacturing settings, it can be beneficial in any instance where there is a process (and there is almost always a process). (Harvard Management Review). It is not repackaged Total Quality Management (TQM), Balanced Score Card (BSC), or other management initiatives. It does not ignore customer requirements; customer requirements are equally important to time savings. LSS is not simply difficult-to-understand statistics and is not an accounting game without real savings.

LSS requires each of the following activities:

- Focusing on what is critical to the customer,
- Emphasizing the bottom line,
- Validating any claims of success, and
- Institutionalizing the process through extensive training programs and certification of expertise (Shere, 2003).

2. Lean

Lean started with the Toyota Production System in the early 1980s and provides a systematic approach to cost improvement through waste reduction and elimination of non-value added activities (LSS College, February 2003). Waste can be anything, such as time, costs, or work that adds no value in the eyes of the customer. Lean means half the labor, half the floor space, increased capacity, improved rapid response capability, one-tenth the in-process work, and shorter overall cycle times. In summary, Lean is focused on speed, while reducing lead time and eliminating waste.

3. Six Sigma

Six Sigma was developed by Motorola Inc. in the mid-1980s due to their Japanese competitor's current concept of quality. Motorola could not afford products of poor quality and therefore, developed Six-Sigma to control variability in processes, with an expected outcome of zero defects in their products (Shere, 2003).

According to the LSS College (6 December 2004), Six Sigma is about quality, reducing defects by eliminating mistakes, reducing variation, and improving overall customer satisfaction. Six Sigma is an optimized performance level seeking minimal defects in any process, whether it produces a product or a service. The DMAIC model, which stands for Define, Measure, Analyze, Improve, and Control, is utilized within Six-Sigma.

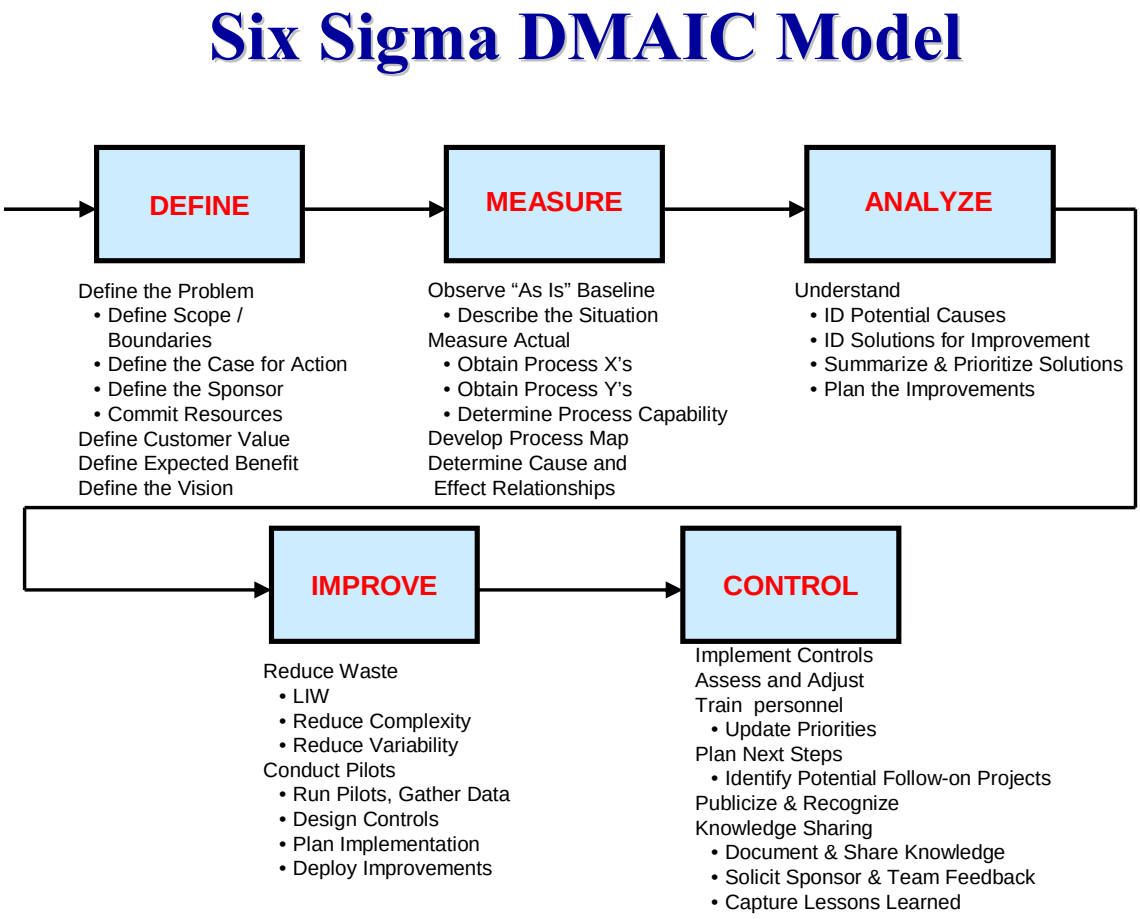

Figure 1. Six Sigma DMAIC Model.
(From NAVSEA Lean Implementation Plan, date)

- Define – Define where you are and where you are going to commit resources;
- Measure – Determine the baseline of the process, the target performance, define the inputs and outputs, and validate the measurement system;
- Analyze – Using data, establish key process inputs that affects process outputs;
-

- Improve – Develop the improvements; create the path to success, implement and embed the improvements; and
- Control – Document, monitor and assign responsibility for sustaining the gains, recognize successes and look to the future.

When defining and measuring a process, it becomes apparent that there are constraints, that is, any resource whose capacity is less than the demand placed upon it (attributed to "The Goal" by E. Goldratt in LSS textbook, Lesson 6, Page 6, 24 Nov 2004). In Eli Goldratt's book titled *The Goal*, he defined the Steps to Constraint Management as the following:

- Identify: What is the constraint?
- Exploit: Utilize all resources to balance workloads; address four Partners
- Subordinate: Focus non-constraints towards supporting the constraint
- Elevate: Apply Lean
- Repeat Step 1: The constraint has probably moved.

Six Sigma is a tool utilized by management that has the potential to successfully improve quality, while producing substantial savings within an organization. According to an article titled "How Six Sigma May Help HR to Improve Processes and Services" published in *HR Focus* (84 (anonymous, 2007), Six-Sigma has been used by companies such as Motorola Inc. (Six Sigma's creator and holder of the Six Sigma registered trademark and service mark), General Electric, and 3M Company. The article further states that these companies have reported improved customer satisfaction and corporate savings in the billions.

4. Lean Six Sigma

Dr. Kenneth D. Shere defines LSS as an approach that combines lean manufacturing and Six Sigma from a global perspective and takes both suppliers and customer into account. This approach tells us how to improve our processes in a way that considers both the costs of poor quality and issues critical to customer requirements (Shere, 2003). Further,

LSS is a structured methodology that focuses on efficiency and quality and could have substantial cost and process benefits when applied to an organization's routine processes (Dobriansky, 2008).

Combining both speed and quality allows customers to pay for work that adds value (changes the form, fit, or function) to the end product and that can be obtained in a timely manner. The methodologies of LSS focus on increased value to the customer, which ultimately results in improved customer satisfaction.

Most processes are "un- Lean," they have a Process Cycle Efficiency (PCE) of <19%. PCE = Value-add Time/Total Lead Time. A primary LSS goal is reducing Work in Process (WIP). If you can't control WIP, you can't control Lead Time (Little's Law). Every process should operate on pull, not push, to minimize Lead Time. Only 20% of the activities cause 80% of the delay. (NSWCDD Lean Training, May 2005).

5. Lean- Six Sigma Roles and Responsibilities

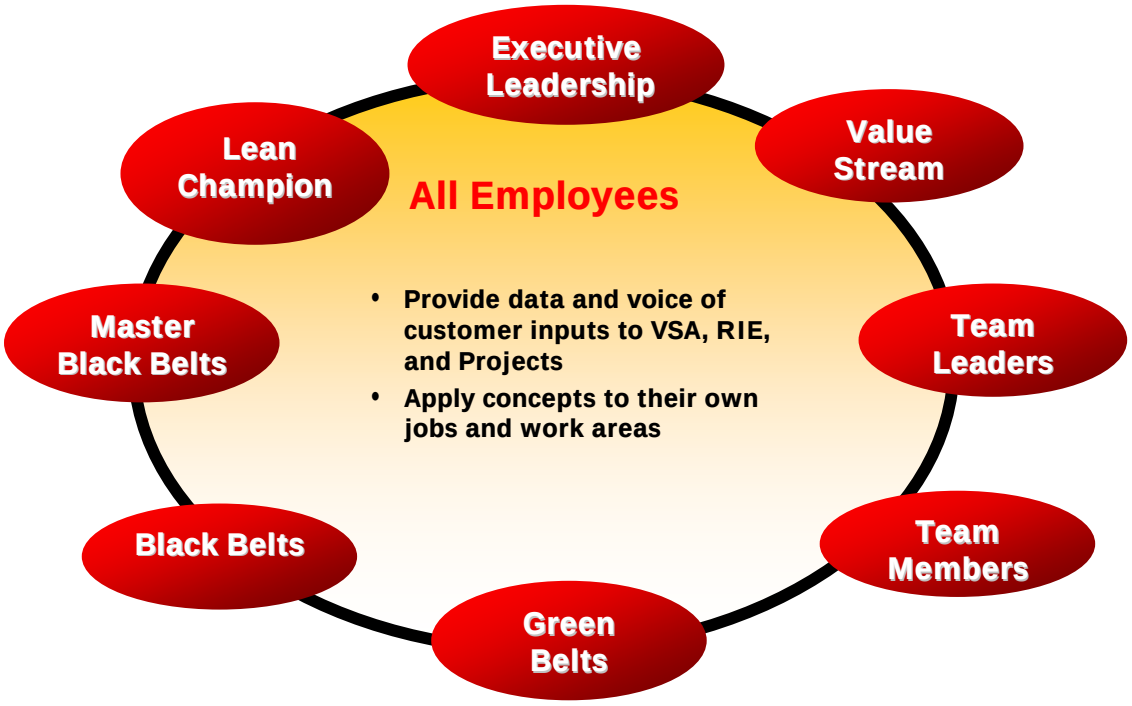

Figure 2. Lean Deployment Roles of NAVSEA
(From NAVSEA Lean Implementation Plan)

a. Executive Leadership

The Executive Leadership owns the vision, direction, and business results. They lead change in the organization and they have the ability to allocate resources. The Senior Leaders are responsible for the successful implementation of the Lean efforts and must take ownership of Lean implementation at their activity.

b. Lean Champion/Lean Office

The Lean Champion is a Senior Manager that reports directly to the Site Commanding Officer. They head the Lean Office and ensure that all Lean activities conducted are aligned with a NAVSEA line of business as indicated in Figure 3, NAVSEA LOB/PEO Business Model from the NAVSEA Lean Implementation Plan.

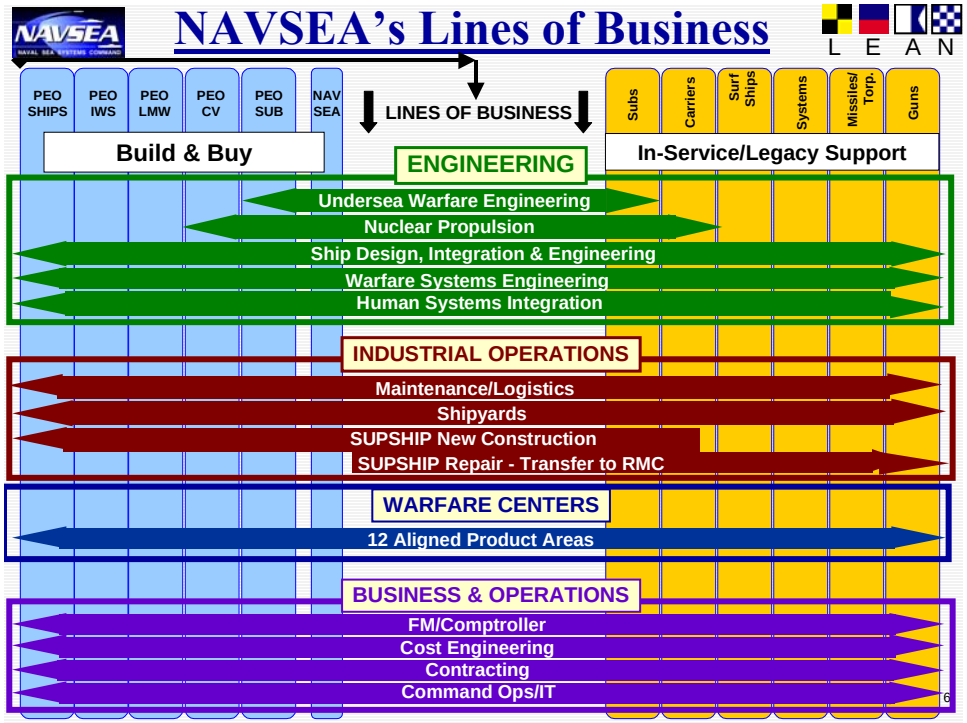

Figure 3. NAVSEA LOB/PEO Business Model (From NAVSEA Lean Implementation Plan)

The Lean Office is responsible for communicating Lean implementation efforts, tracking and reporting Lean events and results, training personnel involved in Lean efforts, and coordinating the use of Lean experts.

c. Value Stream Champion

Value Stream Champions are at the front-line of the NAVSEA Implementation Plan. They are responsible for effective execution of the Rapid Improvement Events (RIE). The Value Stream Champion is responsible for the Rapid Improvement Plan (RIP), Redeployment Plan, and the financial results. They must be personally involved and support Lean efforts in their area, committing the necessary resources, including the removal of any barriers, and implementing the improvement actions.

d. Master Black Belts / Black Belts / Green Belts / Team Members/ Team Leaders

These personnel are the key resources doing the work of process improvement. Master Black Belts and Black Belts are the key facilitators and process improvement is typically their full time job. It is the responsibility of the Master Black Belt to train the Black Belts and Green Belts. The Master Black Belt leads more complex projects, while Black Belts lead larger, yet not as complicated, projects. Green Belts rely on Black Belts as their coach, lead small-moderate projects, and support Rapid Improvement Teams. Team Leaders and Members are normally responsible for the work being improved, and participate in RIEs and Projects. Their involvement is crucial and the reason Lean efforts succeed. They have the knowledge and motivation to implement improvements developed during RIEs and Projects, and they are responsible for the results.

6. Lean Six Sigma – Process Defined

According to Dr. Shere (2003), tasks are value-added when the customer is willing to pay for them. Some tasks, such as invoicing are non- value added, but are essential for business operations. Anything else, in the eyes of the customer, is considered waste or non-value added.

a. Value Added

Essentially, a Value Added activity is something for which the customer is willing to pay. Any step in a process is considered Value-Added if it meets all of the following:

1) If the customer wants it, AND
2) If it changes the product or service, AND
3) If it is done right the first time.

b. Non-Value Added

Any activity that does not meet all three criteria provided above is considered Non-Value added. In many cases, Non-Value Added activities require a great deal of the cycle time. In service processes, most of the work is non-value added because of rework due to errors, omissions, delays in earlier parts of the process and the complexity of the tasking.

c. Non-Value Added Essential

Non-Value Added Essential is an activity which doesn't meet the criteria for Value Added, but it is required and cannot be changed by the customer, by the corporation, or by law (for example, Federal Acquisition Regulation (FAR), Defense Federal Acquisition Regulation (DFAR)).

Figure 4 provides a visual example of Value and Non Value Added activities in a process. The green boxes indicate a value added step and the gray are non-value added.

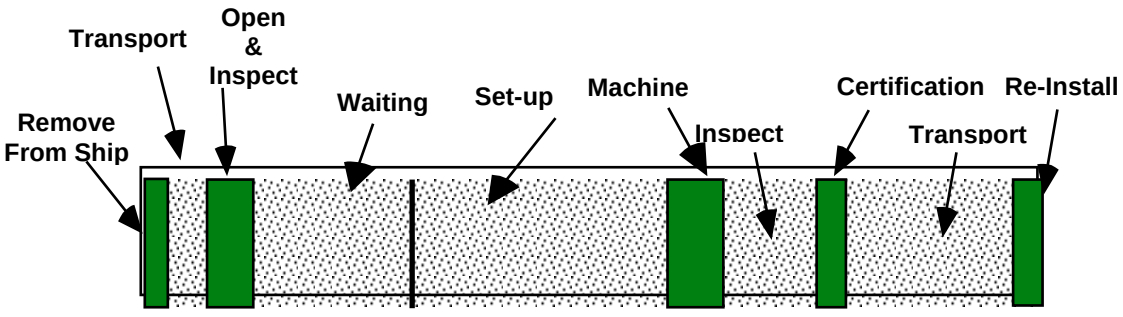

Figure 4. Value Added/Non-Value Added Illustration
(From NSWCDD Lean Event)

The focus at NSWCDD is not on the value-added steps or the people performing them. Instead, the focus is to remove barriers and better support the people doing the work.

d. Process Customer

When examining any process or activity, we must first define the customer. At the NSWCDD, the immediate customer is the funding source (Program Executive Offices (PEOs), Product Area Directorates (PADs), External Funding Streams). However, ultimately, the taxpayer and the War Fighter are our customers.

e. Value Stream

A Value Stream defines the existing processes and possible waste reduction opportunities (Bar, Russell & Finamore, 2006). It consists of all actions currently required to change a product or service to meet customer demand and expectations and then considers what areas of the process could be eliminated.

f. Strategic Plan

The development of the Strategic Plan was accomplished by NSWC Dahlgren Leadership and the Lean Deployment Team. It customized the Lean Enterprise Transformation Approach for each organization based on unique requirements:

- Strategy and Vision
- Goals and Objectives
- Population, Attrition, Overtime, Growth
- Assessed Lean Six Sigma Maturity Level (Physical and Cultural)

The deliverables targeted which were the most beneficial Value Streams to address first; developed a Lean Deployment Model; provided the Initial Organizational Assessment; and determined the Implementation Plan.

The following represents NSWCDD's view of the Strategic Plan. Each section of this illustration will be defined.

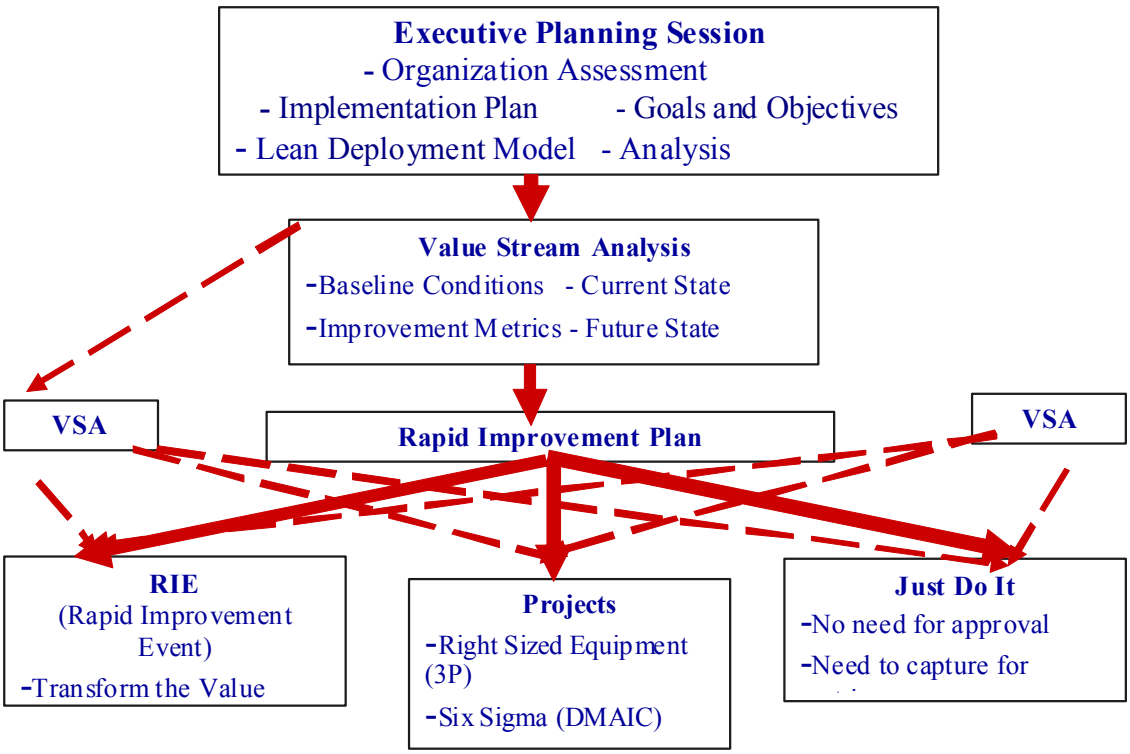

Figure 5. NSWCDD Strategic Plan

(1) The Strategic Plan lays out the desired goals and objectives that the organization is trying to achieve. In order to execute the strategic plan, a top-level Value Stream Map should be done for each organization.

(2) To produce a Value Stream Map, one must:

- Identify the Value Stream for the product or process being worked.
- Map the current state. Identify all the actions that don't create value.
- Develop and map *concepts* for the future state with stakeholders and process participants.
- Define actions and drive toward the future state.

Figure 6 represents a current state Value Stream Map of an event run at NSWCDD. The red blocks represent either Non-Value Added steps or Non-Value Added Essential steps.

Figure 6. Current State Value Stream Map at NSWCDD
(From NSWCDD Lean Event)

Figure 7 is the same event, but the ideal state of that event, with the removal of the Non-Value Added steps with the process:

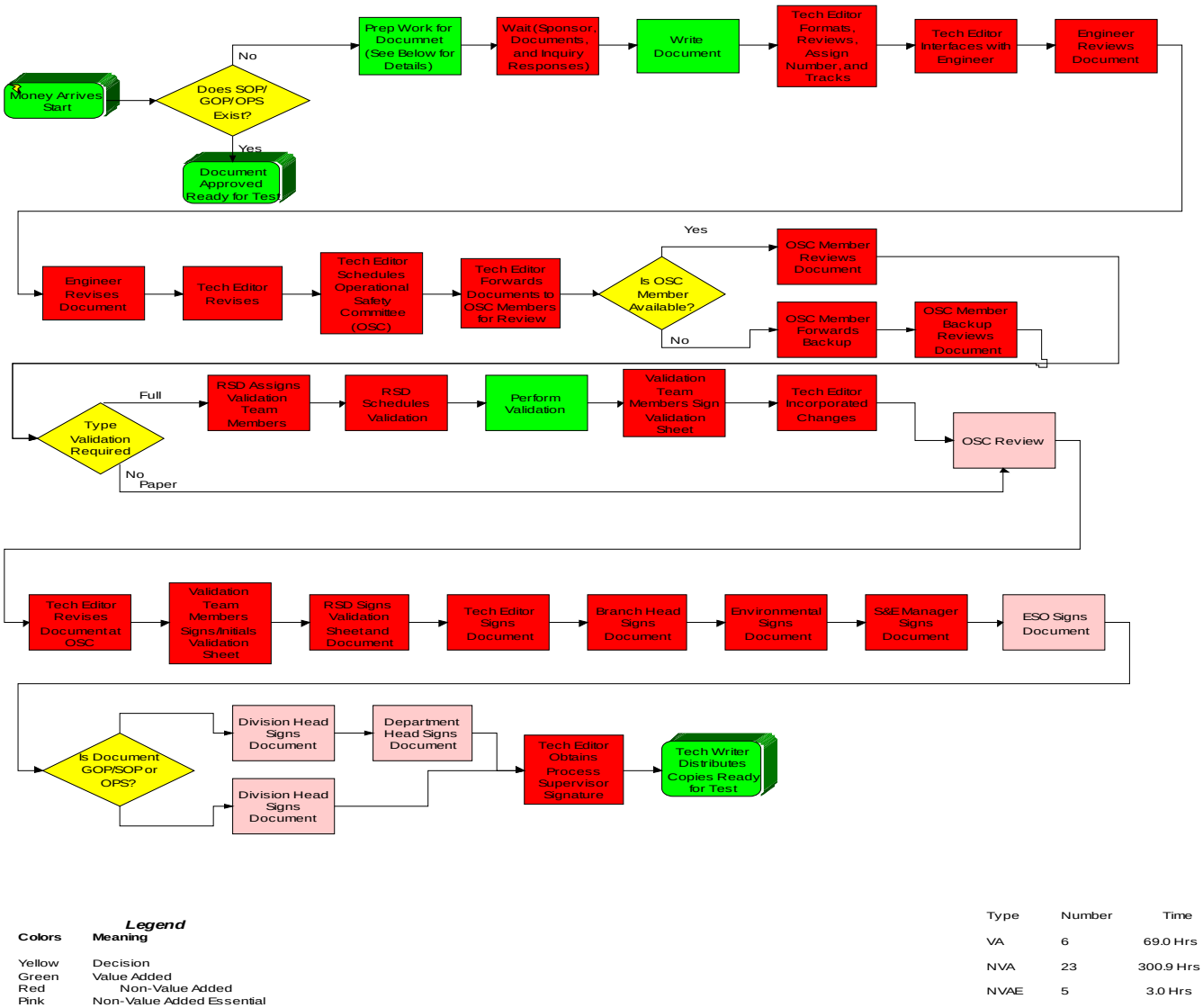

Figure 7. Ideal State Value Stream Map at NSWCDD
(From NSWCDD Lean Event)

(3) Producing a Value Stream Map in conjunction with conducting a VSA results in a RIP during which areas are identified for potential improvements and subsequent events. During the VSA, the Value Stream for the product or process being worked on is identified. The current state must be mapped and all the actions that don't create value must be identified. Concepts for the future state with stakeholders must be mapped. Actions and events must be defined and driven toward the future state. The 10 Steps in a VSA at NSWCDD are provided in Table 1, as follows:

Table 1. 10 Steps in a Value Stream Analysis
(NSWCDD Value Stream Analysis)

STEP 1: Define the boundaries
STEP 2: Define the value
STEP 3: Define the outcome
STEP 4: Walk the product/service flow
STEP 5: Observe and gather data
STEP 6: Map the Value Stream ▪ Customer ▪ Product flow ▪ Information flow
STEP 7: Analyze Current State
STEP 8: Develop Ideal State
STEP 9: Develop Future State map
STEP 10: Develop action plan and tracking

The events that follow a VSA include the RIEs, Projects and Just-Do-Its.

(4) RIE involves individuals that work in the area for improvement with the assistance of a Lean Green Belt. Management does not dictate the outcome; management empowers the individuals that have the first hand knowledge to identify areas for change. There are six to eight individuals per team and an RIE takes approximately three weeks of pre-work, three to five days for the event, and approximately three weeks after the event to enact the identified actions. During the event, the team defines the old process, examines the waste, determines what is value-added, non-value added, and non-value added essential. During an RIE, the team develops an "ideal state", a perfect world picture, and a " future state". Breakthrough items, things that are idea l or concepts that need to be developed that would completely change the way of doing business will come from the brainstorming sessions of developing the Ideal State. The future state defines what the new process will be at the conclusion, the new streamlined process. The team may also opt to run other events or projects as a result of what has been discovered

during the RIE. At the end of that period, the new "process" takes effect. Ideally, the new process would be instituted almost immediately. Changes are implemented during the RIE

(5) A Project is more complex than an RIE and typically takes six months or longer to complete. A project can occur across Departments or Facilities, and may require additional expertise from Blackbelts.

(6) A Just Do It is something that any employee can institute immediately or within 30 days. Implementation opportunities require limited coordination.

(7) Key metrics are the measurements that will help track the success of the implementation and whether the plan needs to be revisited. For example, during an event it appeared that removing the step of a hand entered requisitions into an excel spreadsheet by the technicians would save time in the process. However, when the process was revisited, more time was actually being spent trying to track the requisitions in the cumbersome financial system.

g. Implementation of Lean-Six Sigma

"Understanding your customer needs are crucial before you begin any LSS event, you start with your customer and LISTEN, LISTEN, LISTEN! Leadership must participate in VSA and Rapid Improvement Teams. Employee participation is imperative and should not create job risk." (NSWC DD Lean Training, May 2003) NAVSEA has instituted a requirement that all NAVSEA employees must participate in at least one event before 30 September 2008.

In the implementation of LSS, a culture change is sought and employees must be encouraged to:

- Think differently;
- Work differently;
- Ask questions and CHALLENGE THE STATUS QUO;
- Make decisions based on Facts and Data.

The biggest drawback faced in most events is the unwillingness of some individuals to change. There have been positive experiences with LSS at NSWCDD, Combat Direction

Systems Activity (CDSA) Dam Neck, and NSWC Indian Head within contracts and in the technical departments. Through our research and personal experiences, it has become apparent that LSS can help contracting professionals take a closer look at some burdensome processes within the existing legal and regulatory framework.

At NSWCDD, the volume of work consistently exceeds the capacity of the Acquisition Workforce. This has had a significant negative impact with an increase in PALT, increased compensatory time, and increased customer concerns.

There is currently an issue DoD wide, as the acquisition workforce ages. This is having an impact at NSWCDD. As veterans retire, they are taking experience and knowledge with them. Several crucial things have happened as a result of these retirements:

- Compensatory time usage has increased; NSWCDD utilized one half a labor year in one month alone, at an increased cost to the Government and an added stress on an already stressed workforce. The ability to reduce compensatory time is crucial to NSWCDD both on a cost and cultural level.
- Procurement Action Lead Time (PALT) has increased in an organization that prides itself on maintaining excellent PALT averages; PALT is an existing tool that will help us evaluate whether we are, in fact, reducing the time it takes us to make a contract award. As those award times are reduced, our customer satisfaction may improve.
- There is currently a push at NSWCDD to "do more with less" (Admiral Sullivan) and that makes it difficult to hire experienced individuals, forcing NSWCDD to rely heavily on the Contracting Intern program. Because acquisition workforce members require a great deal of training, the learning curve is enormous (at least two years before Defense Acquisition Workforce Improvement Act (DAWIA) Level II certification) and already overworked Specialists have to train Interns or inexperienced new hires.
- Customer satisfaction has been diminished of late, again in an organization whose primary focus has always been on serving the War Fighter to the utmost of its' abilities. The War Fighter is truly why we work. Our focus must always be on the War Fighter and how we can be a true business partner, assisting them

in furthering their mission while staying within the guidelines of the FAR and DFARS.

- Cost – Cost is an important factor due to the dwindling budgets. It is crucial and we have been encouraged by Admiral Sullivan to "do more with less." (Admiral Sullivan email, 28 July 2006.)

The combination of LSS provides us with the appropriate tools to address some of the issues we face in the procurement process: rework, non value-added steps, increased PALT, increased usage of compensatory time, and decreased customer satisfaction. The first step in the process that should be analyzed is the pre-award procurement process. Based on the LSS foundation provided in this chapter, the pre-award procurement process could be improved in both quality of work and timeliness by utilizing the tools and methods of LSS. Not only could this improve the process, it could also improve the quality of life for the Contract Specialist. Additionally, it could enhance customer satisfaction due to the elimination of waste in a process that is heavily inundated with laws and regulations.

The importance of ensuring that Lean changes are viewed as "Transitional Change vs. Transformational Change" (Ackerman-Anderson, 1996) and the appointment of appropriate teams will be addressed.

This Chapter provided an overview of Lean-Six Sigma. The following chapter will explore the Naval Surface Warfare Center Dahlgren Division Contracts Division's organization and mission.

III. NSWCDD CONTRACTS DIVISION (XDS) – ORGANIZATION AND ACTIVITIES

A. BACKGROUND

The Dahlgren Laboratory Contracts Division falls within XD Department. The Chief of the Contracting Office is the process owner. The strategy of XDS is supported by two operational beliefs:

- **Primary (XDS Mission Statement):** The Dahlgren Laboratory Contracts Division mission is to SUPPORT and perpetuate the NSWCDD Mission Statement; COMMIT to the highest personal and professional standards; MAINTAIN Customer Satisfaction through communication and sound business practices; PROVIDE a desirable and rewarding work environment; COMMIT to continuous improvement of processes; and PROVIDE proactive response to current Acquisition Initiatives and Customer Concerns.
- **Secondary (XDS Vision Statement):** The vision of the Contracts Division is to be recognized as an Acquisition Center of Excellence in meeting the core mission of NSWCDD and its tenants. Responsiveness to the needs of our customers within the established regulations, while exercising sound business practices, is our primary focus. The procurement workforce should be seen as a valued team member working in support of the NSWCDD mission. We actively seek open communication and exchange of ideas with technical customers and with industry. Innovative practices are employed to ensure continuous process improvement and flexibility to address current customer needs and concerns.

B. CONTRACTING PROCESS

The contracting process is a complex, somewhat subjective, assemblage of activities with varied inputs from a wide range of sources. There are many factors that influence the contracting process including, but not limited to, regulations, contract type,

cost, funding, complexity, time constraints, and a retiring contracting workforce. For the purposes of this paper, only the pre-award contract process will be examined. The following provides a basic overview of the actual process of a contract requirement:

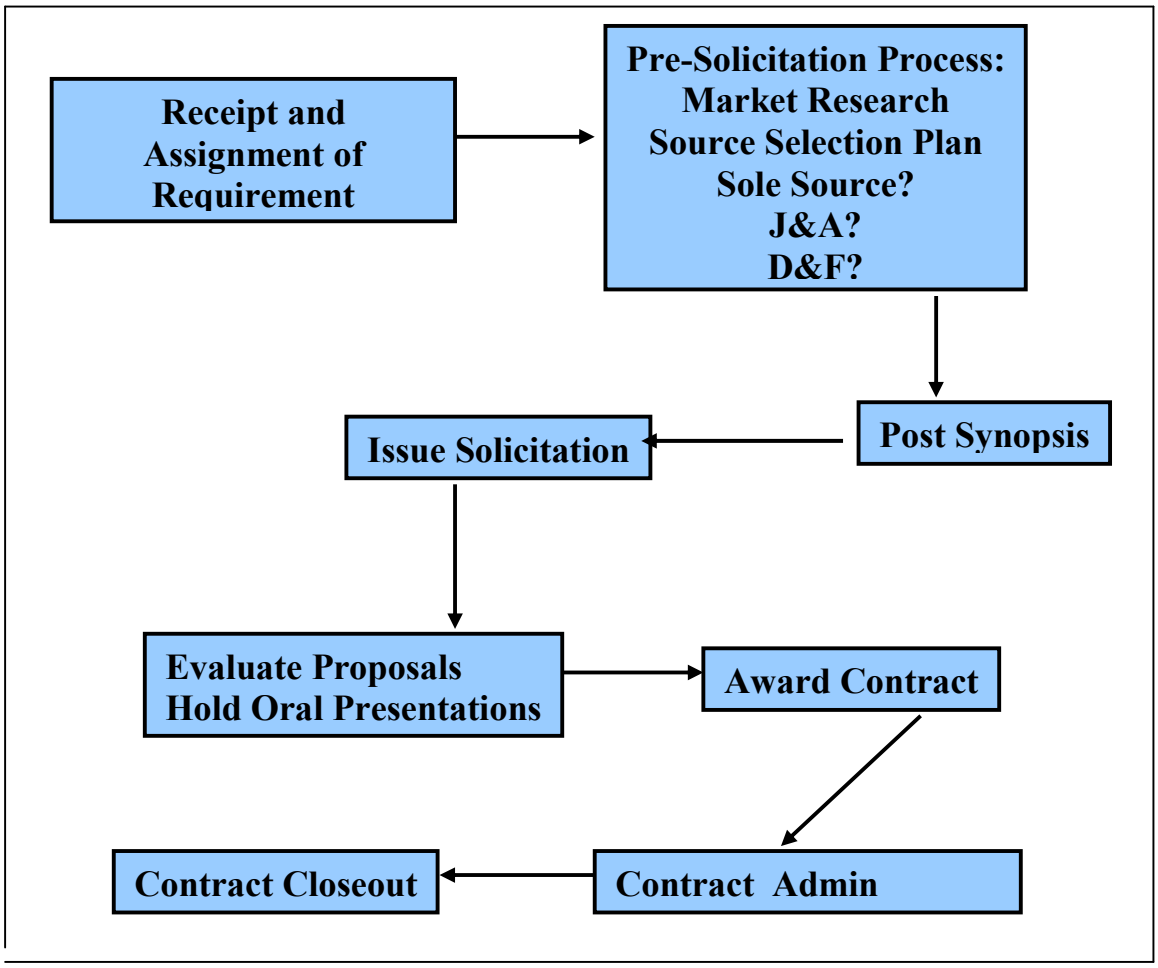

Figure 8. Contract Requirements Process

C. CONTRACTS DIVISION (XDS)

There are three contracting branches in XDS, with each having a unique customer base. The processes within each branch include simplified acquisition procedures (<$100,000), large commercial and non-commercial contracts (>$100,000), contract administration, and, to a certain extent, contract closeout. The workforce is comprised of one Branch Manager (Contracting Officer), three to four Team Leaders/Contracting Officers per branch, Procurement Clerks and Technicians, and Contract Specialists.

During the past five years, XDS has experienced a large number of retirements, which resulted in a huge loss of knowledge and experience. Further, due to hiring constraints, XDS has hired primarily Navy Acquisition Interns with little to no experience. These same hiring constraints are forcing the Technical Departments to seek more Contractor support, thereby increasing the number of contracting actions submitted to XDS at a time of diminishing qualified resources.

D. CUSTOMER

XDS has a diverse customer base, providing contracting support to seven departments located at NSWCDD and tenant commands at NSWCDD, including AEGIS Training and Readiness Center (ARTC). NSWCDD is a research laboratory and, as such, requirements and funding come from a multitude of sources. XDS also provides contracting support to the CDSA Dam Neck, and their tenant commands, such as Joint Forces Command (JFCOM) when appropriate.

After participating in Lean Events hosted by NSWCDD customers, it has been made apparent that there are some customer frustrations at the diminished quality of contract support due to a loss of experienced resources, increased requirements, and the need to continually train new interns. It is the opinion of this team that these frustrations are exacerbated by the mandatory usage of acquisition systems and burdensome reporting requirements, which many times make the Contract Specialist's job more difficult and time consuming. The following is an overview of the systems utilized by the Specialists:

- Standard Procurement System (SPS, also known as PD2). This tool was created to automate and standardize the procurement process throughout DoD. SPS now links logistics and financial systems to enable accurate tracking and reporting of financial data throughout the contracting processes.
- Seaport-e. Seaport-e "provides a standardized means of issuing competitive solicitations amongst a large & diverse community of approved contractors, as well as a platform for awarding & managing performance-based task orders. This unified approach allows SeaPort-e service procurement teams to leverage

their best work products, practices, & approaches across the Navy's critical service business sector." (Seaport-e website, June 2008).

- Federal Business Opportunities (FedBizOpps). This is the single point of entry for NSW CDD opportunities outside Seaport-e. Anything that the government purchases that exceeds $25,000 must be posted on the FedBizOpps website, unless it is set-aside for an 8(a) firm. Vendors then can review all the procurements being proposed and respond accordingly.
- Wide Area Workflow (WAWF). WAWF is a "contracting DoD-wide application designed to eliminate paper from the receipts and acceptance process of the DoD contracting lifecycle. The goal is to enable authorized Defense contractors and DoD personnel the ability to create invoices and receiving reports and access contract related documents." All vendors must submit their invoices through WAWF (WAWF Website, July 2008).
- Electronic Document Access (EDA). EDA is an "online document access system designed to provide acquisition related information for use by all of the Department of Defense." This enables Specialists to conduct market research by viewing what other DoD organizations have procured from the same vendor and at what price (EDA Website, July 2008).
- Federal Procurement Data System, Next Generation (FPDS-NG). Contract Specialists are required to use FPDS-NG for reporting and classifying every contract action (modification and awards) in order to provide a view of federal spending. "The Government has a compelling need to understand where…tax dollars are spent. Collecting data about Government procurements provides a broad picture of the overall Federal acquisition process." (FPDS-NG website, July 2008).

Each of these systems are valuable tools, however, there are times when the lack of training and knowledge sharing can create serious constraints in the contracting process. The Researchers believe that the developers of these systems don't always understand the end-user requirements, therefore making many of these systems difficult to utilize. These systems also can have a major impact on customers. Oftentimes these

systems experience downtime and can hold up a procurement. It has been the experience of the research team that while customers may not understand the application of these systems, they realize these systems can delay the award of their requirement, this consequently creates a dissatisfied customer.

E. APPLICATION OF LSS

We believe that LSS can be applied within the pre-award contracting process to streamline and improve acquisition processes, and to increase customer satisfaction, reduce cost and reduce lead-time. As already noted, we also believe that the pre-award contracting process is the most immediately beneficial area to examine. This is the area that affects the customer most: the timely award of their contract actions. Several LSS events have been held in the Technical Departments seeking a streamlined approach to submitting complete, correct requirements packages, reviewing the nomination of Contracting Officer Representatives (CORs), and even the establishment of a Contracts Liaison or Engineering Liaison Office. Although XD has completed a knowledge sharing/brainstorming event, XD has not completed an event surrounding the "leaning and standardization" of any procurement process.

Based on our experience, reading, and participation in other Lean events, we believe that LSS should be applied within the pre-award contracting process with the establishment of a VSA team. The key to success with LSS is choosing the right individuals to participate on the team. In order to effectively address the pre-award contracting process, this team will need to consist of Contracting Officers and Contract Specialists from all three branches of the NSWCDD Contracts Division, a Defense Finance and Accounting Service (DFAS) representative, technical customers, vendor representation and policy office representation.

The VSA team should be empowered by the Value Stream Champion (Chief of Contracts), who should have the following key responsibilities:

- Communicate the expectation that the VSA and the ensuing events are a priority; and

- Expect and be available for status briefings.

With three separate branches in Contracts and several different processes within each branch, the Champion's support should be especially crucial for success.

The VSA should painstakingly define each step in the pre-award contracting process, ensuring the inclusion of all the variations within branches. Once the various processes are mapped, they will be broken into more manageable pieces like RIEs, Just Do Its, or full blown Projects.

Just Do Its should be executed within 30 days of the conclusion of the VSA. RIEs should be scheduled quickly following the VSA to maintain the support and momentum from the VSA. The majority of the stream lining and standardizing of the process should occur within the RIE. As such, the RIEs are crucial to the success of LSS in the pre-award contracting process. At the conclusion of the RIEs, the new process would be in affect.

We believe that through LSS, the procurement process should be stream lined and standardized. The standardization alone should help alleviate several customer complaints of inconsistencies. Standardization should make it more logical for the technical customers and should make it easier for them to prepare a requirements package with a markedly increased throughput rate. The frustration and time saved from the technical side should increase customer satisfaction. Standardization and consistency should help both the relatively inexperienced interns and experienced Contract Specialists more quickly grasp the procurement requirement, thus reducing cycle time and Contract Specialist frustration.

Streamlining the procurement process should be within the constraints of the Non-Value Added Essential steps. The myriad of regulations will have an affect, but we believe there will undoubtedly be parts of the process that will be considered Non-Value Added. These Non-Value Added steps should be removed from the process, which should provide additional time savings.

By utilizing the tools provided by LSS, the pre-award procurement process should be improved and streamlined, customer satisfaction should be improved as cost would be reduced and lead-time would be decreased.

F. LAUNCHING LSS

There are various approaches for launching LSS programs in acquisition, contracting and procurement processes; specifically the pre-award procurement process. According to information presented by the Chief of the Contracts Office at NSWCDD, NAVSEA currently has a requirement that 100% of the workforce participate in at least one Lean event before the end of the Fiscal Year. This requirement alone establishes the necessity of LSS at NSWCDD.

Based on our readings, experience and participation with other Lean events, we believe that the Champion must educate the employees as to the benefits of Lean to further engage the workforce's support,. This education should use actual examples of success locally and from other activities that could positively impact the Contract Specialist's workload. We think that simpler approaches to achieving buy-in, for example, merely requiring a Defense Acquisition University (DAU) online course, would be a dismal failure. We think that the forum of choice should be the weekly Wednesday morning training sessions made available to all of XDS. The format of these training sessions would utilize small groups, Lean Office Green Belt trainers, and illustrative exercises. In our experience, the acquisition workforce is bombarded with training, which is why the LSS training should be real-time, applicable, and engaging.

We think that rewarding members of the workforce for innovative concepts, applications and positive participation through LSS would serve as a motivation to an already burdened group. It would also incentivize others to become part of a solution, to look at an issue from a new angle, and to be willing to accept change for the promise of an improved workload.

In our opinion, the creation of a strong, valid Contracts Division Policy Office should be beneficial to the application of LSS in the procurement process. The Policy Office is responsible for various functions affecting the contract workforce, including the

dissemination of changes to policy and maintaining the Contracts Intranet, which provides easy access to contracts practices, procedures and instructions to both the technical customer and contracts personnel. So we think that the Policy Office should also be responsible for establishing/publishing best practices and standard operating procedures (SOP) and make them available at a Division Level. This should alleviate a great deal of the uncertainty about contracting processes and should begin to change the culture to one of standardization.

Through the Policy Office, cross-functional teams could be formed to continually revisit SOPs. While service on these teams shouldn't be required, participation on the teams should be valued by the organization in a tangible way, (i.e. on the spot awards, public recognition at Contracts Division events, t-shirts). We think this would serve in breaking down some of the "our way is the better way" culture between branches. It would assist in the sharing of information and would, over time, create a "community" culture.

G. ADVANTAGES/DISADVANTAGES – LSS

With the introduction of any new idea or concept, one must consider the advantages and disadvantages of that concept. There are known advantages and disadvantages of applying LSS methodologies. These same advantages and disadvantages are likely to affect its application to the pre-award contracting process.

To fully gain any available benefits from LSS, one must first acknowledge the disadvantages of this concept. The researchers have experienced three main potential disadvantages: (1) the pre-determined outcome of an event; (2) the lack of authority given to teams by the Champion; and (3) the lack of follow through at the conclusion of an event.

1. It becomes apparent quickly to an LSS team when the Champion has already decided the outcome for the team. This has an obviously negative impact on that event, but also on the team members' view of future events. For example, there was an event held in one of the technical customer's facility to review

preparation of the procurement package to be sent to Dahlgren for award. In our opinion, the right individuals were in the room with the exception of the Champion who not only stayed the entire time and was quite dogmatic, but allowed no progress in the event unless his opinion was determined the right path. The same Champion briefed out each day, ensuring that CDSA management (Captain, Technical Director, and Department Head) heard only his viewpoint. In our opinion, there was nothing Lean that happened in that event. It was merely a means of the Champion changing the process to suit him and wasting a week of the team's time.

2. A Simplified Acquisition Procedure (SAP) event was held in which the right people were gathered in a room, but the team was not truly given the authority to change the process. The team developed the future state and was ready to implement, but the Champion at the time did not empower those changes. That event was two years ago and not one recommendation was adopted. The team was not permitted to put the "Simplified" back in Simplified Acquisition.
3. During the same event, there were to be several spin-off RIEs and Just Do Its that would have standardized the SAP package across the Division, alleviating uncertainty in what the SAP package was supposed to include and in what order. It was never done. This resulted in increased material and opportunity costs and lost time. The advantages of the proper use of LSS are many, but the most easily identified advantages in applying LSS to NSWCDD's pre-award procurement issues should include:

1. Decreased Procurement Action Lead Time: The elimination of unnecessary steps will certainly decrease the amount of time required to award a contract at NSWCDD;
2. Decreased Compensatory and Overtime for Specialists: The extensive use of overtime and compensatory time should be drastically reduced as a result of a streamlined, documented process;

3. Decreased Cost to the Command: The pre-award procurement process has a command wide impact. By improving throughput and standardizing a process, the technical customer should get their requirement in less time, saving both technical and contractual workforce time.
4. Decreased uncertainty due to the standardization of the process: Training of new hires/interns should become more straightforward due to standardization of the process;
5. Inter Branch Teaming: Standardization, should enable one contracts branch to assist another contracts branch during peak times;
6. Improved customer satisfaction: A better understanding of the standardized, streamlined process should improve customer satisfaction. There should be less frustration because of better understanding and reduced cycle times.
7. Improved Contract Specialist morale: The streamlined pre-award process should alleviate some of the frustration experienced by Specialists, and should assist in improving the corporate culture within XDS.

H. CURRENT STATE OF PRE-AWARD PROCUREMENT PROCESS

LSS provides NSW CDD with the tools and methodology to remove the waste from the pre-award procurement process and to standardize the pre-award procurement process. The following chapter addresses a reasonable plan of action for implementing these changes and how LSS principles can be applied to improve the current business practices in the pre-award procurement process, ultimately providing a potential Future State for the pre-award procurement process. To introduce the subsequent chapter and to provide the Current State, Figure 9 on the following page illustrates the current business model for the pre-award contracting process.

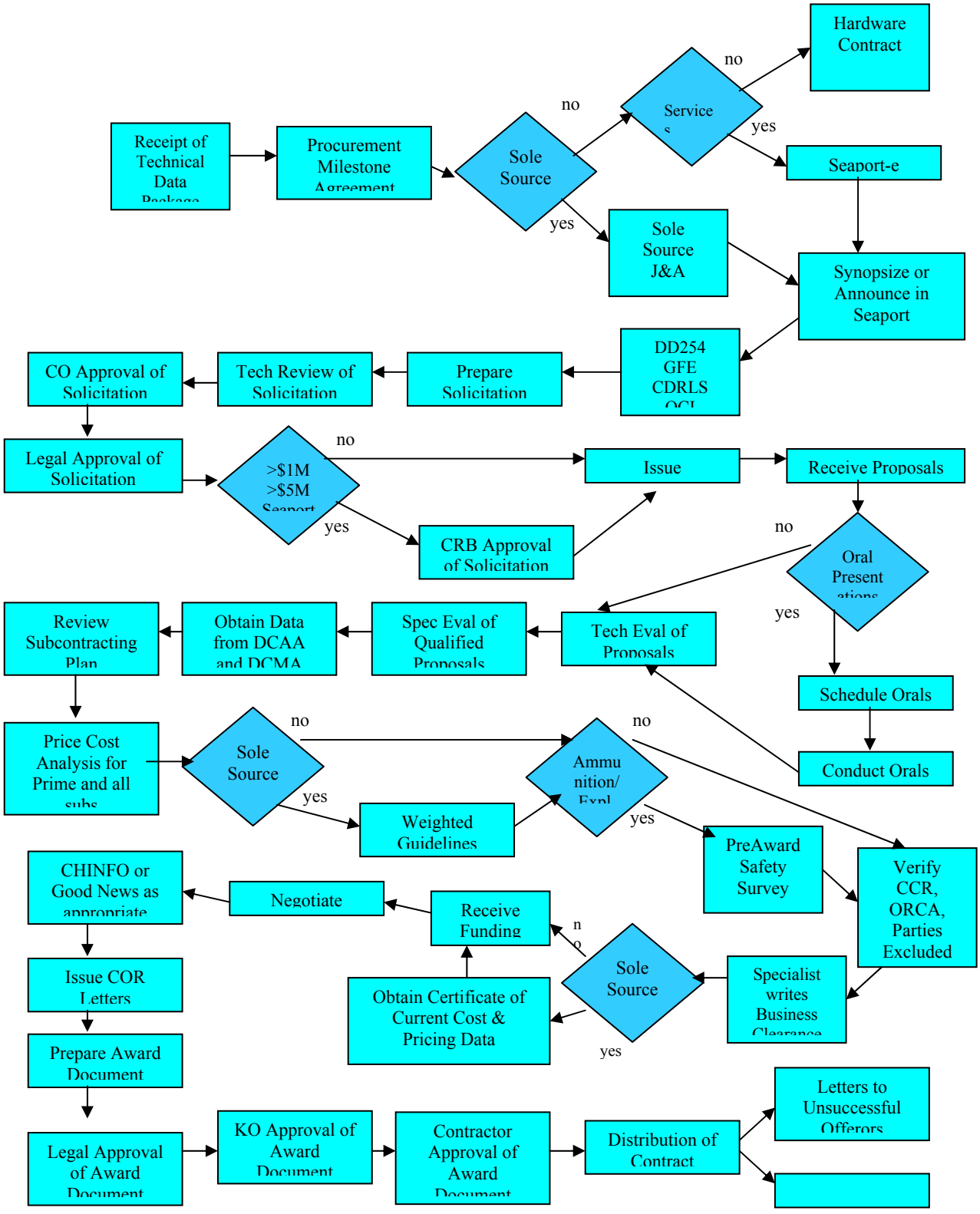

Figure 9. Pre-Award Procurement Business Model

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IV. ANALYSIS OF THE FUTURE STATE OF THE PRE-AWARD PROCUREMENT PROCESS AT NSWCDD

A. INTRODUCTION

The contracting process is a complex, somewhat subjective, assemblage of activities with varied inputs from a wide range of sources. While contract administration and contract closeout are very important parts of the process, it is the amount of time required in the pre-award procurement process that, potentially, has a profound affect on customer satisfaction. For that reason, Lean in the Pre-Award Procurement Process will be analyzed to assess if this is the appropriate tool to improve customer satisfaction.

B. PRE-AWARD PROCUREMENT

When a pre-award package is received, the following issues must be considered:

- Requirement definition and description
- Supplies and/or Services
- Supplies & Services associated with Research and Development (R&D)
- Construction – Architect and Engineering (A&E) Services
- Sole source or competitive acquisition
- Small Business, Educational Institution, or Large Business
- Subcontracting possibilities
- With or without Options
- Cost Analysis or Price Analysis
- Uniform Contract Format (UCF) Section M: Evaluation Factors of Award
- Basis of Award along the Best Value Continuum: Best Value Trade-Off or Lowest priced/technically acceptable (LPTA)
- Source Selection Plan (SSP) elements
- Procuring Contracting Officer (PCO) and Administrative Contracting Officer (ACO)
- Program Manager (PM) and Program Executive Officer (PEO)
- Dollar thresholds: $100K, $550K, $5M, $30M, $75M, $100M

According to the NAVSEA presentation given by Captain Kevin Wheelock to the NSWCDD Contracts Division in 2008, there are approximately 3,456 total possible initial combinations/permutations. When one then considers the 21 different contract types, there are a total of 72,576 possible combinations. This can be overwhelming to new interns and experienced Contract Specialists, especially without any sort of standardized processes in place.

C. PLAN OF ACTION FOR IMPLEMENTING LSS APPROACH

Given the many options, choosing the most appropriate path forward is easier said than done. The researchers felt that management approach and the establishment of the LSS teams would be the two most crucial steps in the process of implementation of Lean Six Sigma in the pre-award procurement process.

Transitional change "is the achievement of a known new state over a set period of time." (Ackerman-Anderson, 1996) Lean Six Sigma provides those tools required to analyze impact on the organization and the Value Stream Analysis and the Rapid Improvement Plan provide a logical plan of action to guide the implementation. Transformational Change doesn't gradually reveal the future state and usually doesn't involve a variety of members from the organization to determine what that new world will look like. LSS provides the opportunity for less disruptive transitional change to occur, providing a great chance of success.

"A team's reputation can become a self-fulfilling prophecy: "good" teams get the pick of projects and people…" (Ancona, 1990). The access and respect of upper management can help a team align to its goals and ensure the success of the team. A comprehensive team must be established. This is a team that "gets the information needed, but does not get stuck in perpetual research." (Constantine,1993). Thus, to avoid an unsuccessful event, we believe that an empowered and respected team must be selected. An ideal team member would have the experience and respect of the organization. These team members must be open-minded about the possibility of establishing and/or refining the procurement processes. The most experienced member

of contracts would not be an effective member of an LSS team if they were not willing to openly review and participate in changing a process.

The researchers think that Pre-Award should be grouped into four categories, with acquisition values greater than $100,000:

1. Seaport-e
2. Commercial
3. Non-commercial Hardware
4. Sole Source Services

The researchers further believe that Seaport-e should be the area in which the most immediate time and cost savings could be achieved. Seaport-e " provides a standardized means of issuing competitive solicitations amongst a large and diverse community of approved contractors, as well as a platform for awarding and managing performance-based task orders. This unified approach allows SeaPort-e service procurement teams to leverage their best work products, practices, and approaches across the Navy's critical service business sector" (Seaport-e website, June 2008).

Seaport-e has a goal of 90 days, for any value Task Order, from receipt of a complete requirement package to Task Order award. The average large contract outside of Seaport-e and valued over $10,000,000 has an average time to award of 180 days. Because of a lack of knowledge and standardization, some Contract Specialists are exceeding both the Seaport-e goal and the Large Contract goal.

NAVSEA has directed that ALL competitive services requirements be issued through the Seaport-e portal; therefore, the majority of new awards at NSWCDD are made through the Seaport-e portal. It has also been determined by both management and workforce that there is a large variance in how Contract Specialists utilize the portal. Seaport-e was established to be more efficient, but through the lack of common processes and knowledge, many contract specialists are over complicating a streamlined method for these large procurement actions. This over complication is due to a number of factors, but in our opinion it is primarily due to:

- Lack of Seaport-e training; and
- Varying corporate cultures ("I am my position" to "The enemy is out there" (Senge, 1990) within the Contracts Division makes Division wide support of mandatory best practices tenuous. Senge addresses "The Myth of the Management Team" It becomes so important to keep up the image of perfection that they "seek to squelch disagreement". When there is disagreement, it's usually expressed as blame and further polarizes opinion.

D. VALUE STREAM ANALYSIS

Due to the majority of awards resulting from Seaport-e as the primary procurement tool, the researchers think it is best to apply LSS within the Seaport-e pre-award contracting process. The establishment of a solid VSA team is essential to the success of the LSS application. Because of the many issues that NSWCDD and other Warfare Centers are encountering, the team should consist of:

- A Certified Black Belt;
- A Certified Green Belt;
- Experienced Seaport-e Contracting Officers from all three NSWCDD contract branches;
- Experienced Seaport-e Contract Specialists from all three NSWCDD contract branches;
- Defense Finance and Accounting Service (DFAS) representative;
- Various experienced Seaport-e technical customers that are supported by all three NSWCDD contract branches;
- Seaport-e vendors representation; and
- NSWCDD Contracts Policy office representation.

The Chief of Contracts, VSA Champion, should kick off the first day of the VSA communicating the expectation that this VSA and the ensuing events will be considered a top priority. The Champion should be in attendance for status briefings at the conclusion

of each day as well. With three separate branches in Contracts and several different processes within each branch, we think that the Champion's support would be especially essential for success.

As previously mentioned, the VSA should painstakingly define each step in the Seaport-e pre-award procurement process. The Solicitation portion of the Seaport-e process includes the following requirements/decisions:

Table 2. Seaport-e Pre-Solicitation Process
(From Seaport-e Task Order Checklist)

1) Contract listed in WINDOWS VERSION OF THE SUPPLY DEPARTMENT CONTRACT ACTION TRACKING SYSTEM WINSCATS
2) Advise Task Order Manager and technical evaluation team to register in the Seaport-e portal
3) Industrial Logistics Support Management Information System (ILSMIS) Requisition or Memo - If DIRECT CITE funds get copy of Work Request/Document
4) Statement of Work/Specifications [FAR Part 11/DFARS Part 211] - Can it be structured as Firm Fixed Price or to include performance-based elements? - Is enough detail given on travel? (if applicable)
5) Independent Cost/Price Estimate [NSWCDLINST 4280.1(series)]
6) Documentation to prepare UCF Section H (Special Contract Requirements)

7) Documentation to prepare UCF Sections L (Instructions, Conditions, and Notices to Offerors) and Section M (Evaluation Factors for Award) in lieu of formal Source Selection/Evaluation Plan - Should be reviewed with Contracting Officer
8) Acquisition Plan Modification - if order will be $50M or more (all years) or $25M (any fiscal year); or 10M for R&D. - Acquisition Plan for Seaport-e has been approved. - For individual Task Orders that exceed the Acquisition Plan thresholds, XDS memo 04/46 dated 20 Aug 04 outlines required supplemental information.
9) DD Form 1423 (Contract Data Requirements List) - If no CDRLs, make sure that there is adequate information provided about all required deliveries (Data/Item delivered, when, format, content, distribution)
10) DD Form 254 (Contract Security Classification Specification) - Solicitation copy - original remains with Security until award
11) Task Order Manager Nomination [NAVSEAINST 4200.17C(series)]
12) Approval for furnishing Government Office Space to Contractor Employees [NSWCDDINST 4200.6]
13) Approval to contract for Consulting Services [SECNAVINST 4200.31(series)]
14) Approval for Contracted Advisory and Assistance Services [DoD Directive 4205.2]
15) IT Review/Approval < $2.5K Department level <$25.0K D12 >$25.0K C/D (via D12) >$25.0K NAVSEA (for items that are NMCI non-exempt)
16) Small Business Coordination Record FAR 19.501/19.803) addressed in software. - No hard copy required in file. - All Task Orders must be reviewed by the Small Business Advisor before development of the solicitation. Additionally, before any Pre-Announcement is published on the portal, the Small Business Advisor must review [XDS Memo Ser 04/46 dated 20 Aug 04] - Cascading Set Aside requires Chief of Contracting Office (CCO) approval
17) Pre-Announcement Notice – posted through Seaport-e portal (when time permits)

18) Determination and Findings (D&F) for Government Furnished Property [FAR/DFARS/NMCARS Part 45.3/NSWCDDINST 4340.1(series)] - Requires Legal Counsel approval [PM 96-02] - Include copy of the Determination and Findings in Pre/Post-Negotiation Business Clearance
19) Ensure services are performance based and that a corresponding Quality Assurance Surveillance Plan (QASP) is incorporated into solicitation/contract.
20) Non Performance-Based Approval - Issuing an order as non performance-based requires Chief of Contracting Office if total value is <$5 Million - NAVSEA 02 approval required if >$5Mfor total order value.
21) Approval of Overtime Premiums in Cost Reimbursement contract. [FAR/DFARS/NMCARS 22.103-4] - Chief of the Contracting Office approval is required on Cost Reimbursement >$100K - Requires Contracting Officer and Legal Counsel approval [SUPDEPTINST 4200.1(series)]
22) Department of Labor (DOL) W age Determination (SF 98/98a) [FAR/DFARS Subpart 22.10] - Check Service Contract Act Directory of Occupations for Applicable Labor Categories
23) Organizational Conflict of Interest [FAR 9.506] - Requires approval by the Chief of the Contracting Office (CCO) - Requires Contracting Officer and Legal Counsel [SUPDEPTINST 4200.1(series)]

24) Contract Review Board (CRB) Review - Task Order requests with an estimated value of $1 Million or greater will be reviewed electronically. CRB and Legal Counsel will have 2 working days (48 hours) to review and comment. Any board member may request that the case be presented in person to the CRB.
25) Prepare Solicitation [FAR 4.803(a)(8)] - Draft solicitations must be reviewed/approved by Contracting Officer, Small Business Advisor and Legal before issuance.
26) Pre-Proposal Conference/Site Visit [FAR 15.201] - If applicable, insert info in solicitation in Section L and in Notice to Offeror
27) Technical review of Solicitation
28) Contracting Officer approval of Solicitation (Route hardcopy)
29) Legal Counsel Approval of Solicitation
30) Issue Solicitation [FAR 4.803(a)(8)] through the Seaport-e portal
31) Amendments to Solicitation – amendments are issued thru the portal
32) Hold Pre-proposal Conference; prepare minutes to meeting questions and answers, post an amendment with the minutes including questions and answers on the portal
33) Late Proposal Determination [FAR 15.208] - Determinations reviewed by Legal [SD10 Memo 00-96 dated 2 Aug 2000]
34) Prepare Late Proposal Letters (send ASAP after approval of Late Proposal Determination)
35) Oral Presentation Notice (If applicable)
36) Make Proposals available to Technical Personnel for evaluation
37) Review proposals for completeness: - Have all amendments to the solicitation been properly acknowledged? - Has UCF Section B Supplies or Services and Prices/Costs been properly completed and if there are price extensions, are they correct? Are totals correct? - Have all offeror representations, certifications and acknowledgments in UCF Section K Representations, Certifications and Other Statements of Offerors been properly completed?
38) Obtain Defense Contract Audit Agency (DCAA) Rate Checks
39) Receipt of Conflict of Interest/Non-Disclosure Statement from Evaluators
40) Review of technical evaluation summaries in the Seaport-e portal - Review for accuracy, any issues that need to be resolved

The Bid/Proposal Evaluation portion of the Seaport-e process includes the following requirements/decisions:

Table 3. Seaport-e Bid/Proposal Evaluation Process
(From Seaport-e Task Order Checklist)

41) Perform Price/Cost Analysis [FAR 15.4] - Price Analysis - on all acquisitions to ensure price offered is fair and reasonable - Cost Realism Analysis - Competitive - Cost Realism Analysis - to identify any unrealistically low cost proposals
42) Follow guidance in Seaport-e CONOPS with regard to offerors that do not stand reasonable chance for award.
43) Pre-Negotiation Business Clearance Memorandum [NAVSEA Handbook; NSWCDD Business Clearance Guide] - Obtain approval of Business Clearance prior to discussions or negotiations [S10 Memo 95-15 dated 14 Jun 95] - All negotiated actions > $5M prior to negotiations/discussions or award without negotiations/ discussions - Actions exceeding $5M require CRB approval [XDS Memo Ser 04/46 dated 20 Aug 04] - Actions exceeding $50M require NAVSEA approval Per XDS Memo Ser 04/46 dated 20 Aug 04, Task Orders at a value of $5 Million or less (including all option values) will be documented in a Memo For File (discussion of best value source selection decision and cost realism is still required) - Reviewed by Contracting Officer and Legal Counsel - Document actions taken during negotiations [FAR 15.406-3] Clearances should be reviewed by the Cost Analyst prior to submission to CRB to ensure proper calculations are performed and the cost aspects of the offerors' proposals are understood. [S10 Memo 92-18 dated 14 MAY 92]
44) Cost Premium Approval – Awards to other than low cost, technically acceptable offeror at a premium greater than 10% shall be approved by an individual at next level above the individual making the award decision. Additionally the technical reasons justifying the cost premium will be approved at a minimum of two levels above the TASK ORDER MANAGER. These approvals will be documented in the Pre Negotiation Business Clearance (or pricing memo for file).

The Discussions/Negotiations/Award portion of the Seaport-e process includes the following requirements/decisions:

Table 4. Seaport-e Discussions/Negotiations/Award Process
(From Seaport-e Task Order Checklist)

45) Evaluate Final Proposal Revision - PCO has to open another round of evaluations in the portal
46) Are adequate and proper funds available for award?
47) Price Negotiation Memorandum (NAVSEA Handbook) - Required when a Post Negotiation Business Clearance is NOT required. Provides an audit trail of actions taken during negotiations. Post-Negotiation Business Clearance Memorandum [FAR 15.406-3; NSWCDD Business Clearance Guide] - Actions exceeding $5M require CRB approval [XDS Memo Ser 04/46 dated 20 Aug 04] - Actions exceeding $50M require NAVSEA approval - Require SD105 review prior to CRB [SD105 memo dated 12 Feb 91]
48) All approved clearances and/or pricing memos are to be stored electronically in the Seaport-e portal in the Package Home – ll02 Files area.
49) Verify vendor's registration is current in Central Contractor Registration (CCR) database before award via Internet http://www.ccr.gov, Electronic Funds Transfer clauses are in nonexempt contracts, and DUNS and CAGE are correct.
50) Obtain final DD 254 from Security
51) Create Task Order in Seaport-e portal
52) Legal Counsel approval of award document [PM 96-02] - Need to route a hardcopy
53) Contract signed and dated by Contracting Officer - Email automatically sent to Successful and Unsuccessful Offerors thru portal.
54) NAVSEA Contract Award Report (NAVSEA letter 028/344 dated 5 Oct 94) - All awards $5,5M or greater

55) Contract Action Report/FPDS-NG [DFARS 253.304-70] - Prepared in the Seaport-e portal
56) Unsuccessful Offeror Debrief - When requested, unsuccessful offers will be provided an Award Determination Document (see example in Seaport-e CONOPS). This document will serve as the debrief.
57) Distribution of Order [FAR 4.203]
58) Posting of Contract to Electronic Document Access (EDA) - Ensure that document is posted timely - Ensure that electronic file was successfully posted. - Ensure that electronic file is complete and legible.
59) Schedule Post Award Conference [FAR 42.503]
60) Issue copies of D&F for GFP to XDS06/Baylor
61) Issue Task Order Manager (TOM) Appointment letters [NAVSEAINST 4200.17B] - Send copy of appointment letter to contractor [DFARS 201.602-2(5)]

As indicated in the three figures above, Contract Specialists are faced with a multitude of decisions to consider. Although all of the requirements listed above are not applicable to all procurements, deciphering what is applicable may be a real constraint to the process.

The decision points/steps in each of these processes would be mapped by the VSA Team. Once the various processes are mapped, a RIP will be developed which provides a formal structure for dividing the information into more manageable pieces like RIEs, Just Do Its, and full blown Projects.

We think that the VSA Team should perform the following key actions:

- Focus on the total system
- Do only what is needed, when it is needed, and as dictated by customer
- Use existing assets; don't add unnecessary sophistication
- Remember that anything that does not add value is waste
- Focus on continuous improvement through the elimination of variations
- Give everyone ownership in the change process
- Support and implement LSS initiatives to create and sustain a culture of continuous improvement

(LSS College, Green Belt, Session 3, NAVSEA Norfolk Naval Shipyard)

Through the execution of the RIP, the required streamlining and standardizing of the processes should occur. The ultimate outcome will determine which of the decision points/steps are considered Value-Added, Non-Value Added, and/or Non-Value Added but Essential based on input from the VSA Team and output resulting from the LSS events.

Through LSS, the procurement process should be streamlined and standardized. The standardization alone should help alleviate some customer complaints of inconsistencies. Standardization should make it more logical for the technical customers and should make it easier for them to prepare requirements packages with a markedly increased throughput rate. The frustration and time saved from the technical side should increase customer satisfaction. Standardization and consistency should help both the relatively inexperienced interns and the more experienced Specialists more quickly grasp the procurement requirement, thus reducing cycle time and Specialist frustration.

E. CONCLUSION

We think that the Seaport-e pre-award procurement process could be improved and streamlined, by utilizing the tools provided by LSS. Customer satisfaction could be improved as cost should be reduced and lead-time should be decreased. There should be a reduced cost to the organization because of the reduction in required overtime and compensatory time utilized, training for the mentor and mentee should be easier because of the use of standardized processes, management should have the ability to distribute work across the contract branches during peak times, and the Contract Specialist's quality of life should be improved by decreased frustration over the myriad of processes utilized in Seaport-e pre-award actions.

We further believe that Cross-functional teams should be formed to continually revisit SOPs. The Champion should empower the team to make right business decisions. LSS provides NSWCDD with the methodology to remove the waste and to standardize the Seaport-e pre-award procurement process. Once proven effective, NSWCDD can achieve an improved future state in other procurement processes through the utilization of LSS.

Chapter IV provided the analysis of the future state of the pre-award procurement process at NSWCDD. The following and final chapter, will provide the team's conclusions and recommendations, addressing each research question posed in Chapter I.

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V. CONCLUSIONS AND RECOMMENDATIONS

A. INTRODUCTION

The researchers have explored how LSS principles might be effectively applied to NSWCDD's pre-award procurement process utilizing the Seaport-e portal. Chapter I set in motion the background, objectives, benefits of study, methodology and organization of the project to provide direction and gain insight into the focus of effort.

Chapter II provided the foundation essential to understanding the methodologies of LSS. The Secretary of the Navy's memorandum issued May 2006 established the need of LSS within the procurement arena. This chapter addressed the concepts, tools, and myths associated with LSS, as well as explained the roles and responsibilities of the members involved in the LSS process. An explanation of the creation of NSWCDD strategic plan was provided in detail, which relied heavily on NSWC Dahlgren Leadership and the Lean Deployment Team. The discussion of NSWCDD strategic plan paved the way to explore the process of creating a Value Stream Map, conducting VSAs, RIPs, RIEs, Projects, and Just Do Its. The chapter concluded with the identification of the key negative issues at NSWCDD that can benefit from the use of LSS processes, including PALT, compensatory time usage, hiring restrictions, customer satisfaction, and cost.

Chapter III specified the organization and activities within NSCWDD Contracts Division (XDS). The Mission and Vision Statements of XDS were provided and the diverse customer base was identified. The various required procurement systems were defined, as well as what we consider to be the frustrations and the hindrance these systems can impose on both the customers and Contract Specialists. The application of LSS within the pre-award process was covered to introduce the importance of a VSA team and the role of the VSA Champion. The known advantages and disadvantages of LSS were reviewed to make known any potential roadblocks or successes that might be encountered by members of the VSA team.

Chapter IV launched the analysis of the future state of the pre-award process at NSWCDD. As a result of NAVSEA directing the issuance of all competitive services

requirements through Seaport-e, the majority of contract awards in XDS are made through the Seaport-e portal. As such, Seaport-e was identified as the area in which the implementation of LSS would likely result in the most immediate time and cost savings. A snapshot of the numerous decisions Contract Specialists face during the pre-award process was covered to illustrate the abundance of choices that have to be made before the contract can even be awarded.

Chapter IV also identifies what we consider to be the need for a VSA team with members consisting of Contract Specialists and Contracting Officers from all three branches, DFAS representative, technical customers, vendor representation, and policy office representation. We prescribed the roles and responsibilities for the VSA team members, including mapping out the current pre-award process while considering all the variations among the branches. Once the various processes are mapped, we recommend that a RIP be developed which would provide a formal structure for dividing the information into more manageable pieces, such as RIEs, Just Do Its, and full blown Projects. The information provided in this chapter forms a case that the use of LSS will streamline and standardize the pre-award procurement process.

Based upon active participant research, and literature reviews, the following sections provide answers to the primary and subsidiary research questions and recommended courses of action.

B. PRIMARY RESEARCH QUESTION

How can LSS be applied within the pre-award contracting process to streamline and improve acquisition processes, including effects on customer satisfaction, cost and leadtime?

1. Conclusion

We believe that LSS can be an effective tool if the recommendations provided herein are actually implemented. The VSA team should include the appropriate members and the VSA Champion should ensure success through empowering and supporting the

VSA team. Through implementation and follow through, LSS should be established as a method of streamlining and improving acquisition processes.

2. Recommendation

Establish the appropriate VSA team. The key to success with LSS is choosing the right individuals to participate on the VSA team. These individuals should include a certified black and green belt, experienced Seaport-e Contracting Officers and Contract Specialists from all three branches within XDS, DFAS representative, knowledgeable Seaport-e technical customers, Seaport-e vendor representation, and policy office representation. The VSA team will define each step in the Seaport-e pre-award process, ensuring the inclusion of the variations between the branches. Once the various process are mapped, the information will be broken down into more controllable pieces through RIEs, Just Do Its, or full blown Projects.

3. Recommendation

Ensure the VSA Champion empowers and supports the VSA Team. The VSA team will have to be empowered by the VSA Champion (Chief of Contracts), who will have the following key responsibilities: (1) Communicate the expectation that the VSA and ensuing events are a priority; and (2) Expect and be available for status briefings. With three separate branches in XDS with several different processes within each branch, the VSA Champion's support will be especially crucial for success.

C. FIRST SUBSIDIARY QUESTION

What are the various approaches for launching LSS programs in various acquisition, contracting and procurement processes, e.g., mandated employee education and training, on the job training, consultant driven, cross-functional teams?

1. Conclusion

There are various approaches for launching LSS programs in acquisition, contracting and procurement processes. The two most important considerations to

launching LSS in contracts are management approach and the establishment of the LSS teams. We think that it is imperative that the tools of LSS be used to institute transitional change. It is equally essential that a highly competent and well respected team be chosen to launch the first Value Stream Analysis. Having involvement and a voice in the unfolding of the future state should provide for less disruptive changes, thereby providing a greater change of success.

The first area to be addressed should be the most cumbersome, initially time consuming process, the pre-award process. NAVSEA currently has a requirement that 100% of the workforce participate in at least one LSS event before the end of the Fiscal Year. This alone provides the need of an established approach for launching LSS within the procurement arena.

2. Recommendation

Establish Mandatory LSS training for all NSWCDD employees. With NAVSEA requiring 100% LSS participation, mandatory training of employees is a necessity. We think that the forum of choice is the weekly Wednesday morning training sessions made available to all of XDS. The format of these training sessions would utilize small groups, Lean Office Green Belt trainers, and illustrative and interactive exercises. Due to the substantial training currently required, LSS training needs to be real-time, applicable and engaging.

3. Recommendation

Facilitate and Incentivize the Motivation of innovative ideas and LSS participation. Rewarding members of the workforce for innovative concepts, applications and positive participation through LSS should serve as a motivation to an already burdened group. It should also be an incentive to others to become part of a solution, to look at an issue from a new angle and be willing to accept change for the promise of an improved workload. These rewards could be varied depending on the level of involvement. Many times the technical programs will have mugs or shirts to celebrate their involvement. While the government is limited as to what can be procured, this

would be a positive step at "branding" the team. Another suggestions for a reward would be the potential for an increased bonus pool or a step increase.

4. Recommendation

Establish a strong, valid Contracts Division Policy Office to establish/publish SOPs. The Policy Office is responsible for various functions affecting the contract workforce, including the dissemination of changes to policy and maintaining the Contracts Intranet. We think that the Policy Office should also be responsible for establishing and publishing best practices and SOPs, as well as making them available at a Division Level. This would alleviate a great deal of uncertainty within contracting processes and would begin to change the culture to one of standardization.

5. Recommendation

Organize Cross-Functional teams to update SOPs. Through the Policy Office, cross-functional teams should be formed to continually revisit SOPs. This should serve in breaking down some of the "our way is the better way" culture between branches and assist in the sharing of information and over time create a "community" culture between the branches.

D. SECOND SUBSIDIARY QUESTION

What are the known advantages and disadvantages of applying LSS methodologies to the pre-award contracting process?

1. Conclusion

With the introduction of any new idea or concept, consideration must be given to the advantages and disadvantages. Three known disadvantages of LSS were identified, as follows: (1) Pre-determined outcome of an event, which can have a negative impact on the event and team members' view of future events; (2) Lack of authority given to teams by the Champion; and (3) Lack of follow through at the conclusion of an event. The potential advantages in applying LSS to NSWCDD's pre-award process include: (1)

Decreased PALT due to the elim ination of unnecess ary steps in the pro cess; (2) Decreased com pensatory and overtim e for C ontract Specialists as a resu lt of a streamlined, docum ented process; (3) Decreased cost to the comm and by i mproving throughput and standardizing the process, whic h results in custom er's receiving their requirement in less tim e, saving both techni cal and con tractual workforce tim e; (4) Decreased uncertainty due to the standardization of the process; (5) Inter Branch teaming due to the standardization of the process; (6) Improved custom er satisfaction; and (7) Improved Contract Specialist morale.

E. THIRD SUBSIDIARY QUESTION

What is the current business model for the pre-award contracting process?

1. Conclusion

The Current State Value Stream Map is shown on page 33.

F. FOURTH SUBSIDIARY QUESTION

How might Lean Six Sigma principles be applied to improve the current business practices in the pre-award proc urement process? What is a reasonable plan of action for implementing these changes?

1. Conclusion

We think that management approach and the establishm ent of the L SS teams would be the two m ost crucial steps in the process of implementation of Lean Six Sigm a in the pre-award procurement process.

2. Recommen dation

Transitional change needs to occur to ensure the success of each of the LSS events. We think that transitional change can occur if Management utilizes the LSS tools appropriately. Lean Si x Sigm a pr ovides the tools required to analyze im pact on the organization and the Value Stream Analysis and the Rapid Im provement Plan provide a

logical plan of action to guide the implementation. We believe that LSS provides the opportunity for less disruptive transitional change to occur, providing a greater chance of success.

3. Recommendation

Chose a comprehensive, well respected and organizationally diverse team for the implementation of LSS in the Contracts Division. The acknowledgement of a team's reputation can help ensure the desired outcome of that team. The access and respect of upper management can help a team align its goals with the organization's goals and help ensure the success of the team. This is a team that "gets the information needed, but does not get stuck in perpetual research." (Constantine, 1993).

4. Recommendation

Once management has chosen the team, provide that team with the appropriate resources to run the first Value Stream Analysis for pre-award Seaport-e procurements. With the decision to utilize LSS tools and the appropriate team, we think that the VSA is the logical next step in the achievement of implementation of a future state. The outcome of the VSA should provide a structured approach to addressing each area of that VSA.

G FINAL CONCLUSIONS AND RECOMMENDATIONS

1. Final Conclusion

This Masters project explores how LSS principles might be effectively applied to NSWCDD's pre-award procurement process utilizing the Seaport-e portal. It provides the foundation essential to understanding the methodologies of LSS and the relevance to the NSWCDD strategic plan. Key negative issues at NSWCDD that can benefit from the use of LSS processes (including PALT, compensatory time usage, hiring restrictions, customer satisfaction, and cost) are identified. NSWCDD Contracts Division is

examined along with the diverse customer base. Various required procurement systems are defined, as well as the frustrations and the hindrance these systems can impose on both the customers and Contract Specialists. The application of LSS within the pre-award process is covered to introduce the importance of a VSA team and the role of the VSA Champion and the advantages and disadvantages of LSS were established. Finally, the researchers launch the analysis of the future state of the pre-award process at NSWCDD and claim that because the majority of contract awards in XDS are made through the Seaport-e portal, Seaport-e would be the first area identified for LSS implementation.

Chapter IV also identifies the need for a transitional approach and for empowered, successful team members to participate in each of the ensuing LSS events. Roles and responsibilities for the VSA team members were defined, including mapping out the current pre-award process while considering all the variations among the branches and a case is made that the use of LSS will streamline and standardize the pre-award procurement process.

H. SUGGESTED AREAS FOR FURTHER RESEARCH

There are limitless opportunities within the Contracts Division for Lean Six Sigma. Once the Seaport-e Pre-Award events are underway, the team suggests that other areas of Pre-Award be identified and lessons discovered through LSS of the Seaport-e process be exploited. The standardization of all pre-award processes should be the highest priority. Administration of varying types of contracts is another area in which LSS could streamline.

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